SALTON SEA AUTHORITY

Request for Proposals

to Assess

Chemical Concentrations

in

Potential Fish meal and Fertilizer

Harvested for Commercial Use

From the Salton Sea, California

May 2, 2000

Study Site

The Salton Sea is the largest body of water in California. It is a hypersaline lake located in a closed desert basin east of Los Angeles and San Diego. The Sea was initially formed in 1905-1907 by flooding on the Colorado River that breached an irrigation control structure, allowing virtually the full flow of the river into the Salton Basin. The Sea's current existence is primarily due to agricultural drainage from the Imperial, Coachella, and Mexicali Valleys; smaller volumes of municipal effluent and storm water runoff also flow to the Sea.

The aquatic ecosystem of the Salton Sea is extremely eutrophic and supports a highly productive sportfishery. The Sea and its adjacent wetlands are a critical part of the Pacific Flyway, providing habitat and seasonal refuge to millions of birds belonging to hundreds of species. Several endangered species, including the desert pupfish and the Yuma clapper rail, inhabit the greater Salton Sea ecosystem.

Background

The Salton Sea Authority and the Department of Interior, through the Bureau of Reclamation, are developing restoration plans for the Salton Sea. Commercial harvesting of fish has been proposed as a potential business venture and as a method for reduction of internal nutrient loading at the Salton Sea. Harvested fish might be used for fish meal and additional end-products that do not involve human consumption. The Salton Sea Authority currently plans to fund a pilot study to explore the marketability and potential techniques for harvesting fish from the Sea. An assessment also must be made of various chemical constituents within those fish to determine if the products of such an operation will meet standards where specific standards exist. According to the definition in California commercial feed law and regulations, fish meal is "clean, dried, ground tissues of undecomposed whole fish and/or fish cuttings with or without the extraction of part of the oil " (California Department of Food and Agriculture, 1997). The California Department of Food and Agriculture (CDFA) has responsibility for regulating commercial feeds and may test lots of fish meal and fertilizer for selected chemical constituents. This agency has authority to condemn and prevent sale of any lots that exceed regulatory standards of maximum concentrations for heavy metals and synthetic organic compounds such as pesticides. The CDFA also regulates the content and labeling of products being marketed as fish meal fertilizers for agricultural purposes, and the percentages of other constituents such as protein, fat, fiber, and ash must be determined for labeling.

Description of Needs

Need: Before any commercial harvest operation begins at the Sea, the concentrations of chemicals contained in fish meal or fertilizer produced from the Sea must be assessed. Data on concentrations of selected chemicals is required for state regulatory standards governing commercial feed. It is not known whether concentrations would exceed any regulatory standards and thus preclude utilization of fish being harvested. The concentrations of selected contaminants are unknown as are the percentages of normal constituents, such as protein, fat, fiber and ash. The absence of a quality database of chemical concentrations in potential fish products from the Sea requires that a study be conducted to determine the concentrations of chemicals of concern for fish meal or fertilizer produced from Salton Sea fish. This study will involve assessments of only tilapia.

Requirements: The obligations of this contract are: (1) field collection, preservation and shipment of fish samples to the analytical laboratory or laboratories conducting the chemical analyses; (2) preparation of fish for analysis; (3) conducting the appropriate laboratory analyses; and (4) providing a report of findings that also evaluates whether any chemicals are present at concentrations that exceed regulatory standards or guidelines as described in the Commercial Feed Law and Regulations (CDFA, 1997). In addition, the contractor is required to seek out and evaluate readily available data (published literature and agency reports) involving chemical analyses of fish of any species from the Salton Sea and include that information in the report of findings. The following technical approach was developed and approved by the Salton Sea Science Subcommittee with assistance from other scientists and agencies with jurisdiction or expertise on this topic. The study solicited in this request for proposal shall satisfy this approach.

Field Collection: In a manner similar to that for any potential harvest operation, five catches or nettings of tilapia will be gathered from the Sea from five geographically dispersed sites or areas that represent coverage of the Sea such as (1) NORTH: near mouth of Whitewater River, (2) SOUTH: Obsidian Butte/Redhill Marina/Mullet Island, (3) EAST: Salton Sea State Recreation Area, (4) WEST: Desert Shores/Salton City) and (5) CENTRAL: deep water location. From each of these areas, 12 tilapia will be selected, i.e., 60 fish total. Each of these subsamples of 12 tilapia will be treated as a separate sample for analysis. Sampling will be conducted at two time periods: pre-spawning and immediately post-spawning; therefore, each sample period will result in a 60 fish sample size (spawning occurs from approximately March through August). This is considered necessary since harvesting is anticipated to be year-round and chemical concentrations within fish could vary substantially prior to and after spawning. The aim of the prespawning sample is to assess fish in their average non-spawning condition before lipid concentrations associated with spawning products increase, as this increase often is associated with higher concentrations of certain organic chemicals. Immediately post-spawning, lipid and organic chemical content may sharply decrease. Assessment of this low point in chemical content is the aim for the post-spawn sample. The median fish age class of 2 years (25-35 cm total length; 450 to 460 grams total weight) will be targeted for sampling. Quality assurance samples (specify and justify use of replicates, trip blanks, etc.) will be collected and will constitute a minimum of 10% of the total number of samples collected. Quality assurance will be applied from collection through analysis so that the data collected are of known and acceptable quality relative to such factors as preventing cross-contamination between

subsamples, maintaining the integrity of sample identification and biological condition, and verification of weights and measurements as well as other considerations consistent with quality assurance and quality control. The following field information will be recorded: sample date, time when nets are removed from water, location[1], sampling gear used, number of individuals in composite subsample, and collectors' names. At the time of field collection, the composite subsamples are to be double wrapped in foil, placed in labeled plastic bags, and placed on dry ice for shipment to the laboratory. If samples cannot be shipped to the laboratory within 48 hours, they will be kept frozen at approximately -15 ^{o}C until they can be shipped. Shipment will be on dry ice.

Laboratory Analyses: Analytical laboratories will conform to Environmental Protection Agency (EPA) guidelines and analytical methods used will be subject to regulatory agency peer review. A listing of methods/procedures to be utilized by the laboratories conducting the analyses will be provided as part of the proposal to facilitate this review. Measurement procedures will be in accordance with EPA regulations and guidelines and must be clearly identified within the proposal.

Analyses will be conducted on the samples of undecomposed, whole, ground-up fish. This is the final form that any potential commercial processing method would render the fish for fish meal or fertilizer. Table I lists the analytes and the minimum detection limits required. The percent content of moisture, lipid, protein, fat, fiber, ash, calcium, nitrogen, phosphorus, sodium, and salt (NaCl) will be determined for each sample. The following potential contaminants must be included in the list of analytes as there are specific regulatory tolerances or standards for them in fish meal: arsenic, lead, mercury, DDT, DDD (TDE), DDE, toxaphene, kelthane (1,1-bis (p-chlorophenyl)-2,2,2-trichloro-ethanol), DEF (S,S,S, tributyl phosphorotrithioite), folex (tributyl phosphorotrithioite). The following chemicals of concern to the CFDA also will be included in analyses: selenium, BHC (benzene hexachloride isomers), aldrin, dieldrin, endosulfan I, endosulfan II, and endosulfan sulfate, endrin, heptachlor, heptachlor epoxide, hexachlorobenzene, total PCB, dachthal (DCPA), and chlordane. The samples will initially be analyzed using a screening method for organophosphates, chlorinated hydrocarbons, and carbamates. Analytical requirements for fish meal are more stringent than for fertilizer and so no additional analyses are required for fertilizer compared to fish meal.

Evaluation: Contractor will provide a report consisting of a thorough scientific evaluation of the subject area of his/her investigations. This evaluation shall utilize all reasonable sources readily available, such as personal ongoing and past investigations, published literature including gray literature of relevance. This evaluation also will include citations provided by the Salton Sea Database Program. Contractor's review shall include an evaluation of the quality of the various components of information summarized. Contractor will provide a draft report within 90 days after award of contract. A final report will be provided within 120 days after award of contract.

Contractor will provide findings regarding concentrations of analytes determined as described above (and listed in Table I) in a final report to the Salton Sea Science Office and Salton Sea Authority within 45 days after collection of fish samples. This report also will evaluate and clearly state whether any chemicals are present at concentrations that exceed regulatory standards or guidelines

[1] Describe location of sampling sites using GPS coordinates and appropriate metadata for GIS compatibility.

as described in the Commercial Feed Law and Regulations (CDFA, 1997) or other applicable guidelines for commercial feeds.

Proposals that go beyond the above specifications will be considered if they are deemed cost-effective, within the scope of available funds, timely, and relevant. The budgets of such proposals should clearly separate the costs of doing the specific work outlined above from the proposed additional work.

References Cited:

California Department of Food and Agriculture, 1997. Commercial Feed Law and Regulations. Agricultural Commodities and Regulatory Services Branch, Department of Food and Agriculture, 57 p.

Table I. Required analytes and minimum detection limits for fish tissue analyses.

Analyte	Minimum Detection Limit	
INORGANIC (ug/g dry weight)		
Arsenic	0.2	
Lead	1.0	
Mercury	0.10	
Selenium	0.6	
ORGANIC (ug/kg wet weight)		
DDT	5.0	
DDD	5.0	
DDE	5.0	
Toxaphene	200	
Kelthane	50	
DEF	50	
Folex	50	
Benzene hexachloride isomers (BHC)	5.0	
Aldrin	5.0	
Dieldrin	5.0	
Endosulfan I	1.0	
Endosulfan II	1.0	
Endosulfan sulfate	1.0	
Endrin	5.0	
Heptachlor	5.0	
Heptachlor epoxide	5.0	
Hexachlorobenzene	5.0	
PCBs, total	50	
Dachthal (DCPA)	5.0	
Chlordane	5.0	
OTHER (Percent)		
Moisture	0.5	
Lipid	0.5	
Crude Protein, minimum	0.5	
Crude Fat, minimum	0.5	
Crude Fiber, maximum	0.5	
Ash, maximum	0.5	
Calcium, maximum	0.5	
Nitrogen, minimum	0.5	
Phosphorus, minimum	0.5	
Sodium, maximum	0.5	
Salt (NaCl), maximum	0.5	

Time and Funding

Study activities must be initiated within 30 days of contract award. There is no set amount of funding set aside for this study.

Data Requirements

Because of the high visibility of the Salton Sea project and the need for real-time information, the performance of this study will be closely monitored:

- Investigators funded under this RFP are required to make their findings available to the Salton Sea Science Office through their project officer or directly to the Science Office as data and results become available. The Science Office reserves the right to redistribute quality-assured data to other contractors for use in their studies, whether or not the contractors have prepared final reports from the original data.

- Investigators are required to fully integrate their data into the Salton Sea database and to cooperate with other investigators working within the Salton Sea Reclamation project. Only peer-reviewed and summary data will be available for general distribution.

- All field data must be submitted in GIS-compatible format including GPS coordinates for all sampling sites and appropriate metadata. Information on Federal Geographic Data Committee metadata standards can be obtained from the National Geospatial Data Clearinghouse:

FGDC Secretariat
c/o U.S. Geological Survey
590 National Center
Reston, VA 22092
voice: (703) 648-5514
fax: (703) 648-5755
email: gdc@usgs.gov
web: http://fgdc.er.usgs.gov

Submission of Proposals

The required proposal format is provided as attachment A to this RFP. Five paper copies of the proposal and one electronic version on 3.25" diskette should be submitted to the following address, to arrive no later than June 2, 2000:

Dr. John F. Elder
Salton Sea Science Office
8505 Research Way
Middleton, WI 53562
Fax: (608) 821-3817
Email: jfelder@usgs.gov

Written questions regarding this RFP will be answered. A record of the questions and responses will be posted on the Salton Sea page of the U.S. Bureau of Reclamation's Lower Colorado River Region website: http://www.lc.usbr.gov.

If this solicitation is amended then all terms and conditions that are not modified remain unchanged.

Evaluation of Proposals

The Salton Sea Science Office will perform an initial screening of each proposal for general compliance with this guidance and relevance. Relevance shall be evaluated using the following criteria:

1) Is the proposal responsive to the RFP, i.e. does it show understanding of the needs identified in the RFP?
2) Will the proposed analyses and evaluations meet the objectives described in the RFP?
3) Does the proposal include an appropriate quality assurance statement?
4) Will the proposal provide timely evaluations?
5) Is the scope of work and time for completion consistent with the needs identified in the RFP?
6) Does the RFP include statements regarding experience and other projects that demonstrate capability to do the work?

Suitable proposals will then be reviewed in depth by at least three technical peer reviewers; at least two of these shall be outside reviewers with no direct stake in investigations or remediation of the Salton Sea. Technical peer reviewers will score each proposal for: (1) technical quality of the proposal, and (2) quality of staff and facilities.

The Salton Sea Science Office will then consider the comments of the technical peer reviews and develop recommendations to the Salton Sea Authority based on those comments, as well as the following:

1) Cost - is the cost of the proposed study reasonable, relative to the benefits of the products to be generated?
2) Reliability - does the proposal submitter have a proven history of timely project completion?
3) Overall relevance - does the proposed study contribute significantly to the stated needs?

The Science Office reserves the right to approve portions of proposals for funding.

The Authority reserves the right, at its sole discretion, to reject any or all proposals(s) received as a result of this request, to negotiate with any qualified source, and to cancel in part or in its entirety this request for proposal. The receipt of proposals shall not in any way obligate the Authority to enter into a contract of any kind with any proposer(s).

Contract Obligations

Receipt of a funding award will obligate the contractor to the following:

1) *adherence to established standards*: The Salton Sea Science Office is committed to high-quality science. As key inputs to the decision-making process, environmental data must be accurate and reliable. Therefore, each proposal is expected to contain a Quality Assurance statement briefly describing how the proposed approach will reliably produce valid data and how any limitations to the use of these data will be identified. All funded proposals will be required to produce an acceptable Quality Assurance Project Plan (QAPP) including periodic QA/QC review and evaluation prior to initiation of work. Additional guidance in preparation of the QA statement as well as the complete QAPP may be obtained from the QA coordinator:

    Barry H. Gump, Ph.D.
    California State University, Fresno
    5241 North Maple Avenue
    Fresno, CA 93740
    Phone: 559-278-2683
    email: barry_gump@csufresno.edu

    or from *EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, EPA QA/R-5, October 1997* which is available on the internet at:
    http://es.epa.gov/ncerqa/qa/qa_docs.html#R-5.

2) *Data sharing*: The nature of the Salton Sea Remediation Project requires conservation of effort in the forms of avoiding duplication of effort, taking advantage of information as it becomes available, and seeking synergistic opportunities for scientific productivity. Contractors are expected to convey significant findings to the Science Office and to each other as they make discoveries and to share baseline data as it is developed. The highest level of professional ethics is expected of all parties in the use of such information. Contractors are also required to share their data with the Science Office when specific requests are made, and so has the right to provide data to others when necessary.

3) *Participation in records and archiving systems*: Contractors will provide and follow a data records system and a materials archiving plan acceptable to the Science Office. The records system is intended to provide data compatibility and accessibility among studies and the archiving plan provides reference material, standards, and samples for future Salton Sea investigations. Approval for approaches must be obtained prior to initiation of work.

4) *Initiation of studies within 30 days of the contract award:* Because of the urgency to maximize the amount of information that is available prior to implementation of management actions, contract awards obligate the investigators to initiate analyses as soon as practical, and no longer than 30 days, after receipt of a contract, unless an extension is authorized in writing with the contract award. Requests for extension should be fully justified, and made at the time the proposal is submitted. However, submitters should be aware that denial of such a request, due to an extension that is unacceptable to the Science Office, would result in rejection of the proposal.

5) *Equal Opportunity Employment and Utilization of Small, Minority, and Women's Business enterprises in Procurement:* These investigations are being supported via a contract between the Salton Sea Authority and the US Environmental Protection Agency. Therefore, Federal requirements regarding utilization of Small, Minority and Women's Business enterprises in procurements related to this contract apply. As a result, all potential contractors need to briefly describe what their good faith efforts will be towards awarding a fair share of any sub-contracts and procurements to Small Business (SBE), Minority Business (MBE), and Women's Business (WBE) Enterprises. The current negotiated “fair share rate” for California is 14% and 8% for Minority and Women business enterprises, respectively. All Salton Sea Authority contractors will be obligated to retain all records documenting their MBE/WBE efforts, and in addition, will be required to report annually (in October of each year in which the contractor participates in this research until the project is completed) to the Science Office on these efforts. NOTE: A fair share objective imposes an obligation on the recipient or contractor to exercise good faith efforts. Good faith efforts by a recipient or prime contractor mean efforts to attract and utilize SBEs, MBEs, and WBEs primarily through outreach, recruitment and race/gender neutral activities.

Attachment A

Format for Proposals

In general, proposals should be printed on 8.5 x 11-inch paper at 12-point font size with one-inch margins. The sections of the proposal are described below. Unnecessarily elaborate proposals beyond those sufficient to present a complete and effective response to this RFP are not desired and may be construed as an indication of lack of cost consciousness.

Proposal authors who include data that they do not want disclosed to the public must add the following statement to the title page:

> "This proposal includes data that shall not be disclosed outside the reviewing government agencies and their agents and shall not be duplicated or used, in whole or in part, for any purpose other than to evaluate this proposal. If however, a contract is awarded to this investigator as a result of, or in connection with, the submission of these data, the government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting agreement. This restriction does not limit the Salton Sea Authority and Science Offices' rights to use information contained in these data if it is obtained from another source without restriction."

Each page of the proposal that contains data to be restricted must be marked with the following legend:

> "Use or disclosure of data contained on this page is subject to the restriction on the title page of this proposal."

Title Page: Descriptive title of proposed study plus name and affiliation of principal investigator(s) and all contact information including mailing address(es), voice and fax phone numbers, and email address(es).

Summary: Brief description of proposed study.

Objectives: Specific accomplishments to be realized.

Narrative: The narrative should demonstrate knowledge of the relevant published literature and clearly describe a technical approach that is both scientifically and statistically sound. Sufficient detail should be included such that moderately informed scientific peers can readily visualize the scope of the proposal. Sampling methodology and frequency should be specified. A quality assurance statement is required.

Milestones and Products: A schedule of key accomplishments, reports, datasets, and other tangible outcomes from the study.

Staffing: A table showing the proposed staffing, principal duties of each staff member, and the time allocation of all scientific staff must be included. Resumes should be provided for the principal investigator and all co-investigators and should focus on education, recent positions, relevant experience and accomplishments, and recent and relevant publications.

Experience: A list of projects completed by the submitting entity and/or principal investigators. The proposal should include statements regarding experience of personnel and should list other projects demonstrating the capability of the contractor(s) to perform the work to high standards and on a timely basis.

Facilities: The proposal should contain a description of the facilities and major pieces of equipment to be used for the research. The description should be sufficiently detailed to allow the technical peer reviewers to determine adequacy with respect to accomplishing the proposed objectives.

Budget: A comprehensive budget covering all proposed activities must be included. At a minimum, the budget must include the following elements:

1) Personnel - by staff member;
2) Travel - separate travel for fieldwork from travel for other purposes;
3) Equipment - purchases and rental;
4) Supplies - major items or categories;
5) Contract services - itemize by purpose and subcontractor;
6) Indirect costs including overhead - provide basis for figure.
*****Please note that overhead charges may not exceed 26%.**
7) Other - substantial costs not included above.